

3.3 PHYSICAL ENVIRONMENT CHARACTERISTICS

3.3.1 Noise Characteristics

Noise is basically defined as unwanted sound. Highway noise, or traffic noise, is usually a composite of noises from engine exhaust, drivetrain and tire-roadway interaction.

The magnitude of noise is typically described by its sound pressure. Sound pressures described in decibels are called sound pressure levels and are often defined in terms of frequency-weighted scales (A, B, C and D). The A-weighted scale is used almost exclusively in traffic noise measurements because it places the most emphasis on the frequency range to which the human ear is most sensitive. Sound levels measured using A-weighted decibel scales are often expressed as dBA.

Noise measurement sites were selected to represent sensitive land uses within the study area. The existing Leq noise levels in the project area, measured 50 feet from the edge of pavement, ranged from 60 dBA to 67 dBA. A background noise level of 49 dBA was used for this study in areas where traffic noise was not the predominant source.

3.3.2 Air Quality

Air quality is defined according to criteria established by the US Environmental Protection Agency (USEPA). Under the Clean Air Act (CAA), these criteria, designated as the National Ambient Air Quality Standards (NAAQS), have been established for six air pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10}) and ozone (O_3). Motor vehicles are known to emit carbon monoxide (CO), nitrogen oxide (NO), hydrocarbons (HC), sulfur dioxide, particulate matter, and lead (Pb), listed in decreasing order of emission.

USEPA also regulates Mobile Source Air Toxics (MSATs), which are a subset of air toxics defined by the CAA. MSATs are compounds emitted from highway vehicles and non-road equipment.

All areas within North Carolina are designated as either attainment, non-attainment or unclassifiable with respect to each of the six pollutants under the NAAQS. Areas that have pollutant concentrations below the NAAQS are designated as attainment; while areas where the NAAQS are exceeded are designated as non-attainment. In non-attainment areas, a State Implementation Plan (SIP) is developed to bring the area into compliance with the NAAQS. Areas where available data are insufficient for classification are designated as unclassifiable. The proposed project is located in an attainment area.